ABSTRACT OF THE DISCLOSURE

LOW VOLTAGE BREAKDOWN ELEMENT FOR ESD TRIGGER DEVICE

As technology in the semiconductor industry advances, semiconductor devices decrease in size to become faster and less expensive per function. Smaller semiconductor devices, particularly MOSFETs, are increasingly sensitive to Electrostatic Discharge (ESD). ESD can either destroy or permanently damage a semiconductor device. Embodiments of the present invention assist in preventing ESD damage to semiconductor devices. An embodiment of the present invention utilizes a diode connected to the substrate terminal of a MOSFET. Under normal operation up to the maximum operating voltage, the diode and MOS devices are open and do not conduct. The diode triggers when an ESD pulse causes the reverse breakdown voltage of the diode to be exceeded. The resultant current switches a connected MOS device, operating in bipolar mode, to dissipate the damaging ESD pulse. The ESD pulse is shunted to ground, thereby avoiding damage to the rest of the device.